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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,543	12/04/2003	Urs-Peter Studer	32478-199165 RK	7940
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VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER NGUYEN, SANG H	
			ART UNIT 2886	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/726,543

Applicant(s)

STUDER ET AL.

Examiner

Sang Nguyen

Art Unit

2886

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-11 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-11 and 13-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's response to amendment filed on 04/30/07 has been entered. It is noted that the applicant contains claims 1-11 and 13-19 and claim 12 has been canceled by the amendment n 4/30/07.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

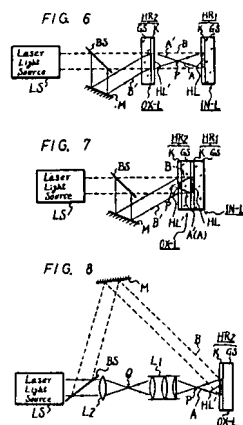
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 6, 8, 13-14, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al (U.S. Patent No. 4,312,559) in view of Case (U.S. Patent No. 4,455,061).

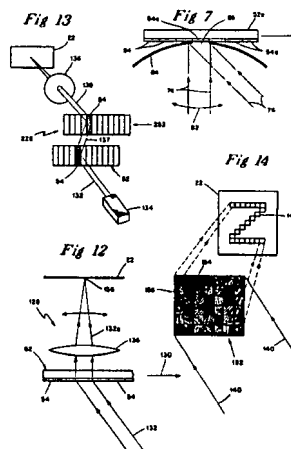
Regarding claims 1, 13, and 19; Kojima et al discloses a holographic optical element, the element comprising:

the holographic optical element (HR2, HR1 of figure 7) having at least two interference patterns (considered to be formed a plurality of interference patterns on hologram record medium r [see col.4 lines 40-50]), wherein each interference pattern (HI of figure 5 and col.4 lines 40-50) of the holographic optical element (HR of figure 5) is created through simultaneous exposure of the holographic optical element (HR of figure 5) to the fan-shaped reference wave front (A',A of figures 6-7) generated by the monochromatic and coherent laser light source (LS of figure 7) and a parallel partial wave front (B', B of figure 7) generated by the same monochromatic and coherent laser light source (LS of figures 6-7) and hitting the holographic optical element (HR2, HR1 of figures 6-7) at a different angle (figures 6-7) than the reference wave front (A, A' of figures 6-7), wherein the number of parallel partial wave fronts (B, B' of figure 7) used for the exposure of the holographic optical element (HR2, HR1 of figure 7) corresponds to the number of interference patterns (col.1 line 57 to col.2 line 12; col.2 line 63 to col.3 line 14; col.4 line 35 to col.5 line 2), wherein when the holographic optical element (HR2, HR1 of figure 6-7) is used in a measuring apparatus (e.g. a laser [1 of figure 12 and a light receiving element[7 of figure 12]), a fan-shaped wave front (figures 6-8) projected onto the holographic optical element (HR2, HR1 of figure 6-7) is diffracted by the at least two interference patterns (e.g., considered to be formed a plurality of interference patterns on hologram record medium r [see col.4 lines 40-50]). See figures 1-14.

U.S. Patent Jan. 26, 1982 Sheet 2 of 4 4,312,559



U.S. Patent Jan. 19, 1984 Sheet 2 of 3 4,455,061



Kojima et al discloses all of features of claimed invention except for the parallel partial wave fronts are virtually extended through the holographic optical element, the parallel partial wave fronts intersect behind the element in a center of a measuring field. However, Case teaches that it is known in the art to provide a holographic optical element (52 of figure 12) having the parallel partial wave fronts (132 of figure 12) are virtually extended through the holographic optical element (52 of figure 12), the parallel partial wave fronts (132 of figure 12) intersect behind the holographic optical element (52 of figure 12) in a center (i.e., scan pot136 of figure 12) of a measuring field (i.e., scan plane and col.12 lines 8-39). See figures 1-15.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the holographic optical element of Kohima et al with the parallel partial wave fronts are virtually extended through the holographic optical element, the parallel partial wave fronts intersect behind the element in a center

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of a measuring field as taught by Case for the purpose of improving the inference pattern recorded on the film acts like a diffraction grating.

Regarding claims 6 and 18; Kojima et al discloses the at least two interference patterns (156 of figure 14) at least partially overlap one another (figure 14).

Regarding claim 8; Kojima et al discloses all of features of claimed invention except for the holographic optical element is a holographic film plate. However, Case teaches that it is known in the art to provide a holographic optical element (30 of figure 2) is a holographic film plate (32, 34 of figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the holographic optical element of Kojima et al with the holographic optical element is a holographic film plate as taught by Case for the purpose of improving the inference pattern recorded on the film acts like a diffraction grating.

Regarding claim 14; Kojima et al discloses the at least one of the first and second interference patterns (HR2, HR1 of figures 6-8) is adapted to diffract the partial wave front at an angle (figures 6-8) with respect to the reference wave front (A,A' of figures 6-8).

Regarding claim 17; Kojima et al discloses the first and second interference patterns (HR2, HR1 of figures 6-8) are completely separate from one another (figures 6-8)

Claims 2-3, 5, and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Case ('061) as applied to claim 1 above, and further in view of Case (U.S. Patent No. 4,547,037).

Regarding claims 2 and 15; Kojima et al in view of Case ('061) discloses all of features of claimed invention except for the at least two interference patterns comprises at least three different interference patterns. However, Case ('037) teaches that it is known in the art to provide the at least two interference patterns (12 of figure 2) comprises at least three different interference patterns (figures 2-3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the holographic optical element of Kohima et al with the at least two interference patterns comprises at least three different interference patterns as taught by Case for the purpose of improving the inference pattern recorded on the film acts like a diffraction grating.

Regarding claims 3 and 16; Kojima et al discloses the at least two parallel partial wave fronts (B, B' of figures 5-7) are all located in a single plane (figures 5-7).

Regarding claim 5; Kojima et al in view of Case ('061) discloses all of features of claimed invention except for the holographic optical element includes a plurality of sections, and each section has a respective one of the interference patterns and the sections are spatially separated from another section. However, Case ('037) teaches that it is known in the art to provide the holographic optical element (10 of figure 2) includes a plurality of sections (12 of figure 2), and each section(12 of figure 2) has a respective one of the interference patterns (36, 38 of figure3) and the sections (12 of figure 2) are spatially separated from another section (figures 2-3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the holographic optical element of Kohima et al with the holographic optical

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element includes a plurality of sections, and each section has a respective one of the interference patterns and the sections are spatially separated from another section as taught by Case for the purpose of improving the inference pattern recorded on the film acts like a diffraction grating.

Claims 7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al in view of Case ('061) as applied to claim 1 above, and further in view of Kaser (U.S. Patent No. 4,955,694).

Regarding claims 7 and 9; Kojima et al in view of Case ('061) discloses a measuring arrangements comprising a transmitting part for generating a laser beam and a receiving part, wherein both parts include a holographic optical element and the holographic optical element of at least the transmitting part comprises the holographic optical element, wherein said arrangement being adapted to be used to measure at least one of the dimension and position an object with the aid of the laser beam, which is deflected so that it sweeps across a specific angular range. However, Kaser teaches that it is known in the art to provide a measuring arrangements (figures 1 and 8) comprising a transmitting part (2 of figure 1) for generating a laser beam (7 of figure 1) and a receiving part (17 of figure 1), wherein both parts (1, 17 of figure 1) include a holographic optical element (11, 19 of figure 1) and the holographic optical element (11 of figure 1) of at least the transmitting part (2 of figure 1) comprises the holographic optical element (11 of figure 1), wherein said arrangement (figures 1 and 8) being adapted to be used to measure at least one of the dimension and position an object (1 of figure 1) with the aid of the laser beam (7, 7₁ of figure 1), which is deflected so that it

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sweeps across a specific angular range (θ of figures 1 and 8 and col.1 lines 10-18 and col.2 lines 28-31). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the holographic optical element of Kohima et al with a measuring arrangements comprising a transmitting part for generating a laser beam and a receiving part, wherein both parts include a holographic optical element and the holographic optical element of at least the transmitting part comprises the holographic optical element, wherein said arrangement being adapted to be used to measure at least one of the dimension and position an object with the aid of the laser beam, which is deflected so that it sweeps across a specific angular range as taught by Kaser for the purpose of reducing weight, simple geometry, lower cost, larger aperture relatively to shorter focal length, and minimal lens errors with optimum reconstruction geometry.

Regarding claim 10; Kojima et al in view of Case ('061) discloses all of features of claimed invention except for the object comprises one of a cable, profile, and a pipe. However, Kaser teaches that it is known in the art to provide the object comprises one of a cable, profile, and a pipe (col.2 lines 28-32 and figures 1 and 8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the holographic optical element of Kohima et al with the object comprises one of a cable, profile, and a pipe as taught by Kaser for the purpose of reducing weight, simple geometry, lower cost, larger aperture relatively to shorter focal length, and minimal lens errors with optimum reconstruction geometry.

Regarding claim 11; Kojima et al in view of Case ('061) discloses all of features of claimed invention except for a device for measuring at least one of the dimension and position of an object, the device comprising: a transmitter part for generating a monochromatic light beam and a receiver part, wherein the transmitter part and the receiver part each include a holographic optical element, wherein the transmitter part includes means for deflecting the light beam in the transmitter part through an angular region onto the holographic optical element in the transmitter part. However, Kaser teaches that it is known in the art to provide a device (figures 1-8) for measuring at least one of the dimension and position of an object (1 of figure 1), the device comprising: a transmitter part (2 of figure 1) for generating a monochromatic light beam (7, 7₁ of figure 1) and a receiver part (17 of figure 1), wherein the transmitter part and the receiver part (2, 17 of figure 1), each of both parts (2, 17 of figure 1) include a holographic optical element (11, 19 of figure 1), wherein the transmitter part (2 of figure 1) includes means for (8, 9, 10 of figure 1) deflecting the light beam (7 of figure 1) in the transmitter part (2 of figure 1) through an angular region onto the holographic optical element (11 of figure 1) in the transmitter part (2 of figure 1 and col.1 lines 10-18 and col.2 lines 28-31). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the holographic optical element of Kohima et al with a device for measuring at least one of the dimension and position of an object, the device comprising: a transmitter part for generating a monochromatic light beam and a receiver part, wherein the transmitter part and the receiver part each include a holographic optical element, wherein the transmitter part includes means for deflecting the light

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beam in the transmitter part through an angular region onto the holographic optical element in the transmitter part as taught by Kaser for the purpose of reducing weight, simple geometry, lower cost, larger aperture relatively to shorter focal length, and minimal lens errors with optimum reconstruction geometry.

Response to Arguments

Applicant's arguments filed 04/30/07 have been fully considered but they are not persuasive. Applicant argued, in pages 7-10, that Kojima et al and/or Case do not teach or suggest "at least two interference patterns located on the holographic optical element, wherein each interference pattern is formed through simultaneous exposure of the element to the fan shape reference wave front generated by the monochromatic and coherent laser light source and a parallel partial wave front generated by the same monochromatic and coherent laser light source" as recited claim 1.

This argument is not persuasive.

As stated above Office action, Kojima et al teaches the claimed invention, for example, at least two interference patterns (e.g., a plurality of interference patterns on hologram record medium r [see col.4 lines 40-50]) located on the holographic optical element (HR2, HR1 of figures 6-8), wherein each interference pattern (HI of figure 5 and col.4 lines 40-50) is formed through simultaneous exposure of the element (HR of figure 5) to the fan shape reference wave front (A, A' of figures 6-8) generated by the monochromatic and coherent laser light source (LS of figure 7) and a parallel partial wave front (B, B' of figures 6-8) generated by the same monochromatic and coherent laser light source (LS of figures 6-8).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Kojima et, Case, ('061), Case ('037), and Kaser references have the same the purpose of teaching correcting the inference patterns recorded on the film acts like a diffraction grating using holographic optical element. Thus, the references are considered in combination, the recitation of the claims would have been obvious suggested.

For the reasons set forth above the arguments, it is believed that the rejection of the claims 1-3, 5-11, and 13-19 under 35 U.S.C 103 (a) is proper.

Applicant's arguments filed 11/07/06 have been fully considered but they are not persuasive. Applicant argued, in pages 6-7, that Kojima et al and/or Case do not teach or suggest "measuring at least one of the dimensions and position of an object with aid of a deflected laser beam", "at least two interference patterns formed on the holographic optical element", and "parallel partial wave fronts intersecting behind the holographic optical element in a center of a measuring field" as recited by claim 1.

This argument is not persuasive.

In response to applicant's arguments, that Kojima et al and/or Case do not teach or suggest "measuring at least one of the dimensions and position of an object with aid of a deflected laser beam", "at least two interference patterns formed on the holographic optical element", and "parallel partial wave fronts intersecting behind the holographic optical element in a center of a measuring field" as recited by claim 1.

First, in response to applicant's arguments, the recitation "measuring at least one of the dimensions and position of an object with aid of a deflected laser beam" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Second, as stated above Office action, Kojima et al teaches the claimed invention "at least two interference patterns formed on the holographic optical element" as recited by claim 1, see col.4 lines 40-50, i.e., the holographic optical element (HR2, HR1 of figure 7) having at least two interference patterns (considered to be formed a plurality of interference patterns on hologram record medium r [col.4 lines 45-46]).

Third, as stated above Office action, Kojima et al teaches the claimed invention except for "parallel partial wave fronts intersecting behind the holographic optical element in a center of a measuring field" as recited by claim 1. However, as stated above Office action, Case teaches that it is known in the art to provide a holographic optical element (52 of figure 12) having the parallel partial wave fronts (132 of figure 12) are virtually extended through the holographic optical element (52 of figure 12), the parallel partial wave fronts (132 of figure 12) intersect behind the holographic optical element (52 of figure 12) in a center (i.e., scan pot136 of figure 12) of a measuring field (i.e., scan plane and col.12 lines 8-39).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Kojima et, Case, ('061), Case ('037), and Kaser references have the same the purpose of teaching correcting the inference patterns recorded on the film acts like a diffraction grating using holographic optical element. Thus, the references are considered in combination, the recitation of the claims would have been obvious suggested.

For the reasons set forth above the arguments, it is believed that the rejection of the claims 1-3 and 5-12 under 35 U.S.C 103 (a) is proper.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chang (5124815) discloses method for forming holographic optical elements; Farnsworth et al (5121371) discloses optical servo system; Hoebing (5117296) discloses apparatus and synthetic holography; Shih et al (5009502) discloses system of holographic optical element; Cederquist (4930847) discloses multicolor holographic element; Gilbreath-Frandsen et al (4878718) discloses method for holographic correction of beams of coherent light; Bjorklund et al (4432597)

discloses transmissive holographic optical element; or Chang (4245882) discloses doubly modulated on-axis thick hologram optical element.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifu Chowdhury can be reached on (571) 272-2800 ext. 86. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

July 18, 2007

SN



Sang H. Nguyen
Primary Patent Examiner
Art Unit 2886